

PURCHASE DESCRIPTION
for the
CONTAINER CONNECTOR, HORIZONTAL (CONNECTOR)

UNITED STATES MARINE CORPS

MARCORSYSCOM-PD-97-0005



COMBAT SERVICE SUPPORT PROGRAM OFFICE
MARINE CORPS SYSTEMS COMMAND
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**PURCHASE DESCRIPTION
FOR THE
CONTAINER CONNECTOR, HORIZONTAL (CONNECTOR)**

1.0 SCOPE. This Purchase Description (PD) covers the performance criteria and the verification parameters for the Container Connector, Horizontal (CONNECTOR).

1.1 Purpose. The purpose of this PD is to establish the performance requirements and operational parameters to which the CONNECTOR must be designed and engineered. Performance, design, and quality assurance requirements, as described in this PD, are required to ensure the form, fit, and function, as well as logistics supportability of the CONNECTOR production. The CONNECTOR will provide the Marine Corps with the ability to utilize the Quadruple Container (QUADCON) to its fullest potential by enabling using units to couple two, three, and four QUADCONs together. When four QUADCONs are joined by the CONNECTOR described in this PD to form one shipping container, then the joined container shall be a certified International Organization for Standardization (ISO) Type 1CX container in accordance with (IAW) Code of Federal Regulations (CFR) 450 - 453.

2.0 APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this PD. This section does not include documents in other sections of this PD or documents recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all requirements documents cited in sections 3, 4, and 5 of this specification, whether listed or not.

2.2 Government documents.

2.2.1 Specifications, Standards, and Handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of Defense Index of Specifications and Standards (DoDISS) and supplements thereto, cited in the solicitation.

SPECIFICATIONS:

MILITARY (Military & Federal are for Guidance Only)
None

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STANDARDS:

MILITARY (**Military & Federal are for Guidance Only**)

MIL-STD-810E Environmental Test Methods and
Engineering Guidelines dated 31 Jul 95

FED-STD-595B Colors Used in Government Procurement
Green 34094, Tan 33046

AMERICAN WELDING STANDARD

D 1.1 Structural Welding Code, Steel; 15th .
Edition dated 1996

OTHER PUBLICATIONS:

Purchase Descriptions
Container, Quadruple (QUADCON)

Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5904. Purchase descriptions cited in this document may be obtained from the Government representative cited in the Statement of Work (SOW).

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are Department of Defense (DoD) adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of document not listed in the DoDISS are the issues of the documents cited in the solicitation.

INTERNATIONAL STANDARDS

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 668-1995 Series 1 Freight Containers -
Classification, dimensions
and ratings; 5th Edition

ISO 830-1981 Freight Containers Terminology; 1st ..
Edition

ISO 1161-1984 Series 1 Freight Containers - Corner
Fittings - Specification

ISO 3874-1988 Series 1 Freight Containers
- Handling and Securing; 4th Edition

ISO 1496/1-1990 Series 1 Freight Containers -
Specifications and Testing - Part 1:
General cargo containers for general
purposes; 5th Edition

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Application for copies should be addressed to the American National Standards Institute, 11 West 42nd St., New York, NY 10036-3308.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E84 - Surface Burning Characteristics of Building Materials, dated 1995

ASTM E162 - Surface flammability of materials using a radiant heat energy source dated 1994

ASTM E662 - Specific Optical Density of Smoke Generated by solid materials dated 1995

ANSI Z1.4 - Sampling Procedures Tables for Inspection .. by Attributes dated 1993

(Address requests for copies to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

Corrosion Control/Prevention Guidelines

National Association of Corrosion Control

1440 South Creek Drive

Houston, TX 77084

HTTP:\\www.nace.org

Painting and coating of metals

Steels Structure Painting Council

4400 5th Avenue

Pittsburgh, PA 15213-2683

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.4 Order of precedence. In the event of a conflict between the text of this PD and the references cited herein, the text of this PD shall take precedence. Nothing in this PD shall supersede applicable laws and regulations unless specific exemption has been obtained.

3.0 REQUIREMENTS

3.1 General. The CONNECTOR shall be designed as a coupling device for use in joining one QUADCON to another. The QUADCON CONNECTORS, when inserted in each of the corner openings on a side of the QUADCON, manufactured IAW Purchase Description Container, Quadruple (QUADCON), will effectively join one QUADCON to another. When four are joined the resulting unit will be the ISO established size for a 20 foot shipping container. The CONNECTOR shall be of sufficient strength to ensure that the

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joined 20 foot container has the necessary structural integrity to meet CFR specifications.

3.1.1 First Article Test (FAT). When specified in the contract, a sample shall be subjected to FAT/inspection. Specific FAT requirements are found in paragraph 4.3 of this PD.

3.2 Material. The contractor shall select the materials, but the materials shall be capable of meeting all the operational and environmental requirements specified herein.

3.3 Design. There is not a prescribed design nor are there detailed drawings to which the contractor shall conform. The intent of the government is to describe in this PD the performance parameters that the CONNECTOR must achieve.

3.4 Performance characteristics.

3.4.1 Mission capability. The CONNECTOR will aid the Fleet Marine Force (FMF) in its ability to store and transport small organic equipment and consumable supplies (organizational clothing, individual equipment, administrative supplies, and repair parts) during deployment and while employed. QUADCONs will serve as a flexible, mobile means of shipping the above mentioned supplies and equipment because CONNECTORs will enable owning units to link shipping containers to constitute a single larger container.

3.4.2 Physical Characteristics

3.4.2.1 Weight. The CONNECTOR shall have a weight no greater than 20 pounds.

3.4.2.2 Dimensions. The CONNECTOR shall provide a 3-inch plus zero, minus .06 separation between the QUADCON corner fittings when coupled together.

3.4.2.3 Compatibility. The CONNECTORs shall prove 100% compatible with the end walls of the QUADCON and the end apertures of the bottom corner fittings as specified in ISO 1161-1984.

3.4.2.4 Loading capacity. The ultimate load capacity of the CONNECTOR shall not be less than 54,000 pounds in tension between bottom corner fittings, 16,900 pounds in tension between top corner fittings, 46,100 pounds in compression, and 16,600 pounds in single vertical shear between bottom corner fittings.

3.4.2.5 Connection time limits. Coupling of one QUADCON to another shall not exceed eight minutes when such coupling is

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conducted by a forklift truck operator and four men using four CONNECTORs.

3.5 Supportability

3.5.1 Reliability. The CONNECTOR shall have an indefinite unused shelf life and in use service life equal to, or greater than 15 years. The components of the CONNECTOR should serve their intended purpose with ease. There should be a smooth functioning of moving parts, and consistent durability and serviceability of all parts or construction members during normal and repetitive usage. Normal and repetitive usage will include daily use in garrison and two 30-day deployments a year to tactical field environments or aboard amphibious or commercial ships.

3.5.2 Maintainability. The CONNECTOR shall be designed so that 100% of required preventive maintenance may be performed in the field. Preventive maintenance shall not be more extensive than cleaning, lubricating moving parts, tightening of fasteners, and applying required preservatives.

3.6 Environmental conditions.

3.6.1 Temperature-humidity. The CONNECTOR shall be capable of functioning when exposed to temperatures of -65°F to 125°F at any possible relative humidity from 0 to 100 percent. In storage, the CONNECTOR shall be capable of withstanding exposure to temperatures of -70°F to 160°F at any possible relative humidity from 0 to 100 percent without cracking, corroding, delamination, or paint peeling from exterior or interior surfaces.

3.6.2 Temperature shock. The CONNECTOR shall be capable of withstanding sudden temperature changes up to and including from 160°F to -70°F and back to 160°F without degradation of physical properties.

3.6.3 Salt fog. The CONNECTOR shall be fully serviceable when exposed to sea-salt fallout equivalent to 25 pounds/acre/year. All fasteners, seals, or other hardware shall show no evidence of corrosion or degradation affecting serviceability.

3.6.4 Snow and ice. The CONNECTOR shall be capable of functioning IAW the requirements of this purchase description during periods of snow and ice storms.

3.6.5 Sand and dust. The CONNECTOR shall withstand the effects of sand and dust on all external moving parts without degradation of physical properties.

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3.7 Design and construction

3.7.1 Materials, processes, and parts. Materials and processes listed below are for general information only and do not dictate or suggest the type of material to be used nor demonstrate the fabrication methods to be processed.

3.7.2 Corrosion. All CONNECTOR components shall be designed and constructed to withstand a severe amphibious environment, routine submission to high velocity salt spray, and long term storage in a salt air environment. Corrosion prevention guidelines are established by the National Association of Corrosion Engineers (NACE). Design elements shall consider areas such as material selection, channels, joints (to include welds), etc., to ensure that the design criteria conforms to NACE guidelines. Selection of processes, materials and finishes shall ensure corrosion resistance for the service life of the connector.

3.7.3 Finish. All surfaces to be painted shall be cleaned and treated and all surfaces or ferrous components shall be coated in accordance with industry guidelines prescribed by the coating manufacturer and the Steel Structure Painting Council. All outside surfaces shall be coated with a prime coat and top coat. Primer and paint shall be chosen to meet the requirements of this PD (especially paragraph 3.6 and 3.7.2). The top coat shall be a flat, low reflective finish. The color shall be Green 34094 or Tan 33446, IAW FED-STD-595B, as specified in each delivery order. Contractor may submit alternative to FED-STD-595B for Government approval.

3.8 Workmanship. All parts, components, and assemblies of the CONNECTOR, including castings, forgings, molded parts, stampings, seals and sealing agents, machined surfaces, and welded parts, shall be clean and free from any defects that will reduce the capability of the CONNECTOR to meet the requirements specified herein. Any components and assemblies that have been repaired or modified to overcome deficiencies or deficient components or assemblies that are determined to be used "as is" shall not be used unless authorized by the contracting activity. External surfaces shall be free from burrs, slag, sharp edges and corners, except where sharp edges and corners are required.

3.8.1 Metal fabrication. Metal used in the fabrication of equipment shall be free from kinks and bends that weaken or stress the metal. Shearing and punching shall be done neatly and accurately. All metal bends shall be made with controlled means in order to ensure uniformity of size and shape.

3.8.2 Welding. Welding will be in accordance with accepted industry standards.

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3.8.3 Castings. Casting shall be sound and free from patching, misplaced coring, warping, or defects that might render the casting unsound for use.

3.8.4 Bolted and riveted connectors. Bolt and rivet holes shall be accurately punched or drilled and have the burrs removed. Washers, lockwashers, or locknuts shall be provided where necessary and all bolts, nuts, and screws shall be tight. Rivet heads, when not countersunk or flattened, shall be of uniform size and shape for the same diameter rivet, concentric with the rivet holes, and in full contact with the surface of the members.

3.9 Interoperability. The CONNECTOR shall be designed so as to allow easy and efficient use by personnel when wearing cold weather or Nuclear, Biological, and Chemical (NBC) clothing.

3.10 Identification and marking. The contractor's part number shall be embossed, etched or engraved on each CONNECTOR.

3.11 Safety. The CONNECTOR shall be designed for easy and efficient use. The CONNECTOR shall be designed and constructed in such a manner so as not to pose a safety hazard to personnel.

4.0 VERIFICATION. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all test requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the quality assurance requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the tests set forth in this PD where such tests are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1 Classification of Tests/Inspections. The inspection requirements specified herein are classified as follows:

- a. First Article Test (see Section 4.3)
- b. Quality conformance inspection (see Section 4.4)

4.2 Responsibility for tests. To validate the design, the contractor shall conduct the tests specified in Table I on the FAT specimens. Approval of the first articles by the Government shall not relieve the contractor of the obligation to supply equipment conforming to this purchase description.

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4.3 First Article Test. The contractor shall conduct the tests specified in this section on the FAT specimens. The first article specimens shall be manufactured using the same procedures and tooling proposed for production of connectors intended for delivery to the Government. Approval of the first articles by the Government shall not relieve the contractor of the obligation to supply equipment conforming to this PD for the duration of the contract. None of the tests shall commence until after Government approval of the contractor's test plan and completion of fabrication of all test specimens. The contractor shall furnish at least 12 horizontal container connectors that are required to test an array of QUADCONs. The contractor shall be responsible for the adequacy of the connectors he chooses to meet the requirements of this PD.

4.3.1 General. The specific performance characteristics requiring verification and validation during FAT are listed in Table II; First Article Test Matrix. In addition to any contractor tests and inspections, the Government reserves the right to perform inspections in accordance with DFARS 252.211-7004 Inspection and Acceptance - Commercial Items, to insure that the product submitted for delivery meets all requirements of this PD.

Table I; FAT Matrix

Table I; First Article Test Matrix					
Performance Characteristic	Reqt. Para.	Test Method	# of Determinate's per Unit	Results Reported as Pass or Fail	# of Sample Units
Mission Capability	3.4.1	See Note #1	N/A	Yes	N/A
Weight	3.4.2.1	4.4.1	1	Yes	8
Dimensions	3.4.2.2	4.4.2	1	Yes	8
Compatibility	3.4.2.3	4.4.3	4	Yes	8
Loading capacity	3.4.2.4	4.4.4	5	Yes	8
Connection time limits	3.4.2.5	4.4.5	1	Yes	8
Unused Service Life	3.5.1	See Note #2	N/A	Yes	N/A
In-Use Service Life	3.5.1	See Note #3	N/A	Yes	N/A
Maintainability	3.5.2	See Note #4	N/A	Yes	N/A
Temperature-Humidity	3.6.1	4.4.6.1	1	Yes	8

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Table I; First Article Test Matrix					
Performance Characteristic	Reqt. Para.	Test Method	# of Determinate's per Unit	Results Reported as Pass or Fail	# of Sample Units
Temperature shock	3.6.2	4.4.6.2 & .3	1	Yes	8
Salt fog	3.6.3	4.4.6.4	1	Yes	8
Snow and Ice	3.6.4	4.4.6.5	1	Yes	8
Sand and dust	3.6.5	4.4.6.6	1	Yes	8
Dissimilar metals	3.7.2	See Note #5	1	Yes	8
Finish	3.7.3	4.4.7	3	Yes	8
Workmanship	3.8	4.8	8	Yes	8
Metal fabrication	3.8.1	4.4.8.1	3	Yes	8
Welding	3.8.2	4.4.8.2	3	Yes	8
Castings	3.8.3	4.4.8.3	3	Yes	8
Bolted and riveted connectors	3.8.4	4.4.8.4	3	Yes	8
Corrosion	3.8.5	4.4.8.5	1	Yes	8
Interoperability with Cold Weather Clothing	3.9	4.4.5.1	1	Yes	8
Interoperability with NBC Clothing	3.9	4.4.5.2	1	Yes	8
Identification & marking	3.10	4.4.9	2	Yes	8
Safety	3.11	4.4.10	2	Yes	8
Note #1 Mission Capability is a function of the CONNECTOR's ability to meet all the requirements of this PD. Therefore validation of the mission capability requirement shall be determined by pass or failure of the FAT.					
Note #2 -- Validation of an unlimited unused service life shall be verified by the Government through a review of certifications for materials used in construction of the CONNECTOR's, review of the methods for production, and the performance of the CONNECTOR's when tested for their ability to withstand environmental stresses, i.e., solar load, temperature extremes, salt fog etc. and strength requirements.					
Note #3 -- Validation of a 15 year service life shall be verified by the Government through a review of certifications for materials used in construction of the CONNECTOR's, review of the methods for production, and the overall durability of the containers during testing for all requirements.					
Note #4 -- While a formal level of repair analysis will not be done, the Government will conduct an analysis of parts and productions procedures to verify that maintenance (Organizational and Intermediate) does not require skills, tools, or equipment presently not existing in the Marine Corps.					
Note #5 -- Validation of the absence of dissimilar metals in the CONNECTOR's will require evaluation of the drawings, material certifications, production methods, and the results of all test events during FAT. Failure of the CONNECTOR during FAT will occur if during any of the test events or evaluations the CONNECTOR exhibits galvanic corrosion.					

4.4 Tests and examinations

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4.4.1 Weight. The weight a CONNECTOR shall be taken. The requirements of paragraph 3.4.2.1 shall be satisfied.

4.4.2 Dimensional. The center portion of the CONNECTOR, which is exposed between coupled QUADCONs, shall be measured to the nearest 0.01 inch to validate compliance with the dimension (3 inches) and tolerance (+0, -0.06 inches) requirements. The CONNECTOR shall be mounted and completely closed in the correct orientation between one right-hand bottom corner fitting and one left-hand bottom corner fitting and then visually inspected to confirm that the CONNECTOR does not extend beyond the planes of the side walls and bottom faces of the corner fittings as specified in ISO 1161-1984. The CONNECTOR shall be mounted and completely closed in the correct orientation between one right-hand top corner fitting and one left-hand top corner fitting and then visually inspected to confirm that the CONNECTOR does not extend beyond the planes of the side surfaces and top surfaces of the corner fittings. All corner fittings used in this test shall conform to bottom corner fittings specified in ISO 1161-1984.

4.4.3 Compatibility. The CONNECTORs shall be tested to ensure interface with the end walls and through the end apertures of the bottom corner fittings as specified in ISO 1161-1984. The CONNECTORs shall be capable of being connected to and retained by one QUADCON while another QUADCON is positioned for coupling. Four CONNECTORs will be used to connect two QUADCONs, two at the top and two at the bottom of each side. The QUADCONs procured by this solicitation shall possess corner fittings selected to meet the requirements of the bottom corner fittings as specified in ISO 1161-1984. For this application, the bottom right-hand corner fitting (selected IAW ISO 1161-1984) shall also be used as a top left-hand corner fitting and the bottom left-hand corner fitting (selected IAW ISO 1161-1984) shall also be used as the top right-hand corner fitting.

4.4.4 Strength requirements

4.4.4.1 Tension capacity between bottom corner fittings. The CONNECTOR shall be mounted and completely closed in the correct orientation between one right-hand bottom corner fitting and one left-hand bottom corner fitting and then subjected to 54,000 pounds of axial tension applying the force to the corner fittings at a rate not to exceed 10,000 pounds/minute. This test shall be repeated on each of the first article test specimens. Each of the specimens shall be serviceable after this test. The corner fittings used in this test shall conform to the bottom corner fittings as specified in ISO 1161-1984.

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4.4.4.2 Tension capacity between top corner fittings. The CONNECTOR shall be mounted and completely closed in the correct orientation between one right-hand bottom corner fitting and one left-hand bottom corner fitting and then subjected to 54,000 pounds of axial tension applying the force to the corner fittings at a rate not to exceed 10,000 pounds/minute. This test shall be repeated on each of the first article test specimens. Each of the specimens shall be serviceable after this test. The corner fittings used in this test shall conform to the bottom corner fittings as specified in ISO 1161-1984.

4.4.4.3 Compression capacity. The CONNECTOR shall be mounted and completely closed in the correct orientation between one right-hand bottom corner fitting and one left-hand bottom corner fitting and then subjected to 46,100 pounds of axial compression, applying the force to the corner fittings at a rate not to exceed 10,000 pounds/minute. The corner fittings used in this test shall conform to bottom corner fittings as specified in ISO 1161-1984. The test shall be repeated on each of the first article specimens. Each of the specimens shall be serviceable after this test.

4.4.4.4 Shear capacity. The CONNECTOR shall be mounted and completely closed in the correct orientation between one right-hand bottom corner fitting and one left-hand bottom corner fitting and then subjected to 16,600 pounds of single shear, applying the force to the corner fittings at a rate not to exceed 10,000 pounds/minute. The corner fittings used in this test shall conform to bottom corner fittings as specified in ISO 1161-1984. This test shall be repeated on each of the first article test specimens. Each of the specimens shall be serviceable after this test.

4.4.5 Time to operate. Measurement shall be made of the time required for four men, with a forklift truck with operator and four CONNECTORS, to dock and couple two QUADCONS. The time period shall start with the QUADCONS adjacent and correctly oriented, but not touching, and with the CONNECTORS at the side fully opened. The time period shall end when the QUADCONS are fully docked and coupled, with all four CONNECTORS fully closed and seated. The reverse procedure shall be used to measure the uncoupling time. The time period shall end when the QUADCONS are fully uncoupled with all four connectors removed. The test shall be conducted twice. One test will be conducted on a prepared level surface chosen by the contractor. The second test will be on an unprepared surface, similar to a tactical field environment, chosen by the contractor and approved by the Government. To pass the test, coupling and uncoupling shall be completed within eight minutes.

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4.4.5.1 Interoperability with Cold Weather Clothing. The above tests shall be conducted when the four men are wearing standard cold weather clothes to include the cold weather gloves. To pass the test, coupling and uncoupling shall be completed within nine minutes.

4.4.5.2 Interoperability with NBC clothing. The above tests shall be conducted when the four men are wearing MOPP IV protective gear. To pass the test, coupling and uncoupling shall be completed within nine minutes.

4.4.6 Environmental test

4.4.6.1 Humidity resistance. The CONNECTOR shall be subjected to requirements similar to MIL-STD-810E, Method 507.3, Procedure II. After cycling, the CONNECTOR shall be examined and shall show no evidence of delamination, cracking, corrosion, or deterioration of any part of the CONNECTOR.

4.4.6.2 Temperature range. The CONNECTOR shall be cold soaked in a mechanically refrigerated cold chamber at -70° F for a minimum of 16 hours. The chamber temperature shall then be raised to -65° F. The CONNECTOR shall be opened and closed. Any malfunction shall be recorded and reported. The CONNECTOR shall then be visually examined both internally and externally for material degradation. There shall be no damage to components and all hardware shall operate as specified during and after completion of this test.

4.4.6.3 Temperature shock. Two CONNECTORs shall be subjected to requirements similar to MIL-STD-810E, Method 503.3. Upon completion of this test, the CONNECTORs shall be serviceable as determined by successful completion of the test described in paragraph 4.4.6.2 and shall show no evidence of degradation of physical properties.

4.4.6.4 Salt fog. One representative sample of the CONNECTOR shall be subjected to test similar to MIL-STD-810E, Method 509.3, except that the salt solution shall have a concentration of 10 percent, and the exposure period shall be 96 hours. Upon completion of this test, the test items shall show no evidence of delamination, cracking, corrosion, or deterioration.

4.4.6.5 Snow or ice resistance. To determine if the CONNECTOR is damaged or made unserviceable by ice or freezing rain the test units during cold weather testing shall be flooded with sufficient water to simulate a soaking rain shower. If when the water freezes the CONNECTOR does not remain fully functional despite the presence of ice the CONNECTOR shall be determined as having failed the ice test.

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4.4.6.6 Sand and dust. The CONNECTOR shall be subjected to the requirements similiar to MIL-STD-810E, Method 510.3, Procedures I and II. There shall be no damage to components, and all hardware shall operate as specified during and upon completion of this test. Failure to operate satisfactorily will constitute failure of the FAT.

4.4.7 Finish. The finish on CONNECTORs selected for FAT and product assurance shall be inspected to determine the integrity of the primer coat and finish coat of paint. Any bare metal, improperly cured paint, flaking of paint, chipping of paint, or presence of rust shall constitute failure of this test event in the FAT.

4.4.8 Workmanship. Workmanship shall be verified during FAT by careful inspection of the specimen CONNECTORs for cracks, gaps in jointed or welded seams, integrity of materials, cleanliness of materials, and absence of material defects. Castings shall be inspected for warps, cracks, or defects that would lead to failure. Failure of the CONNECTORs regarding workmanship shall be determined by Government observers during FAT and will depend upon the total number of defects and type of defects per QUADCON unit.

4.4.8.1 Metal fabrication. The metal in completed CONNECTORs shall be visually inspected to determine that there are no kinks or stresses from bends visible. Visual inspection that reveals burrs, sharp edges, or lack of uniformity shall constitute failure of the FAT.

4.4.8.2 Welding. All welds shall be visually inspected to determine that weld beads are complete, free of slag, and have sufficiently joined the metal parts with required strength. Any failure of welds during any part of the FAT shall constitute failure of the FAT.

4.4.8.3 Castings. If metal castings are used in the construction of the CONNECTOR those CONNECTORs selected for FAT and for product assurance shall undergo inspection by appropriate magna-flux testing to determine if there are fissures, flaws or cracks in the casting. Any casting found defective shall be discarded and such failures shall constitute failure of the FAT.

4.4.8.4 Bolted and riveted connectors. If CONNECTORs are constructed using bolts and rivets, such CONNECTORs shall be inspected to determine that holes are accurately punched or drilled and have the burrs removed. All rivets and bolts shall be of a uniform size for the same diameter rivet or bolt. Fasteners of all types shall be inspected to determine the tightness and contact with surface members. Fasteners found to

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be loose or not uniform in size shall constitute failure of this test event in the FAT. CONNECTORs found to have burrs shall constitute failure of this test event in the FAT.

4.4.8.5 Corrosion. Determination of the CONNECTORs ability to withstand corrosive environmental affects shall be resolved by the salt fog test described in paragraph 4.4.6.4.

4.4.9 Identification and marking. CONNECTORs shall be inspected to ensure that part numbers are clearly visible and permanently marked on each CONNECTOR. CONNECTORs not so marked shall constitute failure of this test event in the FAT.

4.4.10 Safety. The CONNECTOR shall be inspected to determine that there are no safety hazards inherent in the design or production that present a safety hazard to personnel. Any sharp edges, sharp corners that when rounded do not hinder the functionality of the CONNECTOR, or parts that entrap fingers or could potentially pinch extremities shall constitute failure of this test.

4.5 Test reports. The results of all testing shall be reported and written in compliance with paragraph 3.6.2 of the Statement of Work (SOW) fully describing and illustrating the test procedures and test results.

4.6 Production acceptance testing. Each shipping lot of CONNECTORs fabricated by the contractor shall be subjected to the tests specified in Table II using the Government approved sampling procedures of ANSI/ASQC Z1.4. Failure of any test shall be cause for the sample unit to be rejected. Rejected units may be repaired or corrected and resubmitted for inspection with the approval of, and in the manner specified by, the Government.

4.7 Quality assurance. Quality assurance inspections shall include the examinations listed in Table II. The quality assurance provisions set forth in this PD shall become a part of the contractor's overall quality program. The absence of any quality assurance requirements in this PD shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.7.1 Quality Assurance Inspections. Each shipping lot of CONNECTORs fabricated by the contractor shall be subjected to the tests specified in Table II using sampling procedures contained in ANSI/ASQC Z1.4. Failure of any test shall be cause for the

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sample unit to be rejected. Rejected units may be repaired or corrected and resubmitted for inspection with the approval of, and in the manner specified by, the Government.

Table II; Test Matrix

Table II, Tests		
PERFORMANCE REQUIREMENT	First Article Tests	Quality Assurance Tests
Mission Capability	X	
Weight	X	X
Dimensions	X	X
Compatibility	X	
Loading capacity	X	
Connection time limits	X	
Unused Service Life	X	
In-Use Service Life	X	
Maintainability	X	
Temperature-Humidity	X	
Temperature shock	X	
Salt fog	X	
Snow and Ice	X	
Sand and dust	X	
Dissimilar metals	X	
Finish	X	X
Workmanship	X	X
Metal fabrication	X	
Welding	X	X
Castings	X	X
Bolted and riveted connectors	X	X
Corrosion	X	
Interoperability with Cold Weather Clothing	X	
Interoperability with NBC Clothing	X	
Identification & marking	X	X
Safety	X	X

5.0 Packaging, Handling, Storage, and Transportability (PHS&T). Shall be IAW the SOW.

6.0 Notes. TBD

6.1 Intended use. The CONNECTOR covered by this purchase description is intended to be used in groups of four to link one QUADCON to another to form single larger containers.